

Analysis of Risk Variables in Business with Walnuts and Its Impact on the Production Program and Structure of Farm

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Abstract

The aim of this paper is to analyze the variables that produce the highest investment risk for the business of manufacturing and sale of nuts when asked restrictive conditions and reflect their impact on the profitability on the manufacturing program and structure of the farm. To achieve this purpose, the author has used information developed by its investment project for the establishment and cultivation of walnuts and hazelnuts applied method is a sensitivity analysis of the variables studied and the method of Ronald Kay overall planning of farm
Key words business, agriculture production program production structure, walnuts

Introduction

Any investment in agricultural business is related to the assumption of investment risk. Risk can be presented as probability actual proceeds from an investment to the estimated ones. Investments in production with delayed return nature of the level of risk is much more - as compared to other types of industries .. As an object of study we have assumed a representative of shellfish species, namely walnut, as most of this type - stands out between singularity and the rate of return on capital investment and consequent difficulties to manufacturers .. It should be noted that this study is a continuation of another, in which, through factual data through various approaches and methods has been proven specialty in organic development of nut trees and how ignoring this feature prevents the development of that sector and the manufacturing sector as a whole.

Summary:

The purpose of this article is to reflect the impact of risk variables price, yield and discount rate on the profitability of the business nuts and the choice of production program and to propose a solution to reduce risk through diversification of the production structure of the economy by introducing attractive, fast-moving and highly profitable types.

The definition of risk variables affecting the profitability of the business with cultivated hazelnut and walnut is done using statistical methods underlying the method of sensitivity analysis in its fourth version of the application. In summary we present the stages through which we have come to the end result and the ensuing conclusions.

The first stage is investigated the degree of influence of the factors price, yield and discount rate in the range of variations that may be caused as a result of changes in their values. The second stage is done the risk assessment of the investment project is calculated as the most - common indicators of investment risk - the variance, standard deviation and coefficient of variation (standard deviation) and the third stage is the assessment of whether the investment is financially profitable items 's that the financial impact is sufficient to cover the extent of the risk.

Acquisition of - a clear idea of the nature used in developing statistical indicators give short explanations of the conceptual apparatus as sub dispersion of a random variable is to be understood the magnitude of the deviation from the mathematical expectation. The dispersion is indicated by standard deviation is denoted by and means scattering data and measure the probability distribution. The coefficient of variation or called standard deviation ratio is the ratio between the standard deviation and expected return per unit of risk shows return.

The net present value (NPV) used in the calculation of statistical indicators is a dynamic indicator bearing on the effectiveness of the project, its business (at maximum positive value NPV project or business is effective, NPV = 0 when the investment is assessed alternative (relative) price or other terms of lost profits based on its acceptance or non-acceptance, when NPV <0 projects entirely rejected, investment is inefficient). Can be calculated using the following analytical dependence.

$$NPV = \frac{P_1}{(1+r)^1} + \frac{P_2}{(1+r)^2} + \dots + \frac{P_n}{(1+r)^m} - C \quad (1.1.)$$

Where: NPV is the net present value lev; P1, P2,, Pn - net cash proceeds from the use of capital investments during the real economic fruiting in other words, it's pure profit per year in the period of real fruit bearing (when revenue from the production and sale of production are - greater than the costs); C - the amount of investment spending (the establishment of plantations in the year of taking the actual economically fruiting; r - discount (interest) rate. its estimated future cash flows are brought to this moment there is comparability of variables.

Note: When calculating the amount of the investment costs should also be factored time (by applying the formula for compound interest, known in the literature), since this period covers the nuts 10 to 11 years, even under the most - skorozrelite varieties return begins be realized after the 5-6 year and this should be taken into account in determining the parameters based on which performance will be calculated and will be on selecting a financing program.

The risk assessment in this case the starting point is used the fact that the yield of production is a random variable, subject to the normal law of distribution of value - average yield, expressed in net present value (NPV), its average deviation for the period lifecycle of the project, ie the period of effective fertility and the coefficient of variation. Data for statistical analysis of the main line yields are derived from the budget of culture developed by the author of the study based on the Technology Map for the creation and cultivation of crops that have been developed at a time when the author had direct observation and experience in growing a representative of the types of nuts and updated to the date of realization of basic research ..

To analyze the impact of price on financial - economic indicators of the project to produce kilogram shells are taken three price levels in 2 lev. 2.60 and 5 lev lev / kg. ceteris paribus. The results of the assessment of risk variables and their impact on the profitability of the business nuts are presented in Tables 1, 2, 3 and 4.

Analysis of the impact of the variable "price"

Tabl.1.1

Variant	The variable	NPV of investment lev / 10 - they ha	Probability relative units
Optimistic	5	558 079	0,15
Realistic	2	19 734	0,70
Pessimistic	2,60	136 664	0,15

Analysis of the impact of the variable "yield" on the profitability of the production of nuts

Tabl.1.2

Variant	Value of variable kg. wood	NPV of investment lev / 10 - they ha	Probability relative units
Optimistic	180	89 289	0,30
Realistic	150	19 736	0,60
Pessimistic	195	135 816	0,10

Analysis of the impact of the variable "discount rate" on the profitability of the production of nuts

Tabl.1.3

Variant	The variable	NPV of investment lev / 10 - they ha	Probability relative units
Optimistic	9	-100 326	0,25
Realistic	6	19 734	0,70
Pessimistic	14	-284 662	0,05

Classification of risk variables affecting the profitability of the business is presented in Table 4 and is realized in the above - mentioned in the article parameters - variance, standard deviation and coefficient of standard deviation³

³ Analysis of risk variables performed by adapting the method of sensitivity analysis and reflected summarized in tables 1, 2, 3 and 4 was carried on the basis of real data but market and business conditions in Bulgaria. Reporting is the experiences and observations of the author in the area under consideration

Tabl.1.4.

Variable	Dispersion of NPV	Standard deviation of NPV	Coefficient of variation
Price lev. / Kg.	3.586202410	189372,71	1,60
Yield, kg. / Tree	1744188402	41 763,48	0,79
% discount	1.7206512 10	41 480,73	- 0,16

Attached are the following formulas:

$$\overline{NPV} = \sum_{i=1}^n NPV_i \cdot p_i \quad (1.2.)$$

$$\sigma^2 = \sum_{i=1}^n (NPV_i - \overline{NPV})^2 \cdot p_i \quad (1.3.)$$

$$\sigma = \sqrt{\sigma^2} \quad (1.4.)$$

$$Coefficient\ of\ variation = \frac{\sigma}{\overline{NPV}} \quad (1.5.)$$

From tabular interpretation of the analysis can be summarized that most - high investment risks raises variable "price". Second is the variable "production" and the third - "discount rate" Therefore, efforts to - accurate forecasting and planning, and reduce the risk of investment should focus on the first two variables.

An interesting question is why the price of shells is so low compared to that of hazelnuts and other representatives of the type having a similar nutritional value and what are ways to approximate their alignment? In this connection, an attempt was made on the basis of nutritional value of walnuts, hazelnuts and yield for the varieties and growing costs, calculated on the basis of technological maps to derive methodological approach to adjusting the price of shells shown in equation 5 In presenting the author's approach is based on the following information: walnut yield of accepted varieties Silistra, Sheynovo and Dryanovski is 51% protein is about 18%. They contain a lot of fat, vitamins and minerals. The cost of 1 kg. 1.20 lev nuts and 1 kg.leshnitsi 1.37 lev Hazelnut kernels in literature contain 61.25 to 71.56% fat, 16 to 21% pure protein, vitamins and minerals. With superior calorific value fruits of walnuts, almonds, figs and grapes. The yield of the varieties in the study adopted Ran and Roman Trapezunski is about 61%.

$$\frac{P_n}{K_{n1} * K_{n2} * K_{n3}} = \frac{P_o}{K_{o1} * K_{o2} * K_{o3}} \quad (1.6.)$$

where:

P_1 and P_o are the prices of hazelnuts and walnuts in shell lev / kg.;

K_{n1} - The percentage of hazelnut proteins in relative units;

K_{n2} - Yield of hazelnut in relative units;

K_{n3} - The cost of producing hazelnuts in a random year of significant economic productivity of hazelnuts, in this case 16 - year of the project lev for 1 kg. hazelnuts;

K_{o1} - The percentage of proteins of nuts in relative units;

K_{o2} - The yield of nuts in relative units;

K_{o3} - The cost of producing 1 kg. walnuts in a random year - in this case 16 - th years of the project lev / kg.

Based on the proposed approach, the adjusted price of 1 kg. shells at the specified limiting conditions was 3.77 lev

Despite the positive effect of the change in the price of kg.orehi with shells on the profitability of the business and its production of walnuts in the current economic conditions is unprofitable because investment costs are high, the return on investment is delayed and the developer to seek alternative options for program production and structure, providing a quick return on his investments and sustainable income as a function of time or in other words to take a strategy of diversification of production.

Influence of risk variables on the profitability of the business nuts and choice of production program and structure

The production program is a system of quantitative and qualitative indicators determining production and marketing of a product as a function of time. Economic characteristics of a production program are the main products to be produced in the enterprise, the main objectives pursued, the strengths and weaknesses of the company and others.

Production bound program production needs with the capabilities of enterprise to produce, limited by the size of the holdings of resources and level of use. If, based on the assumption that the area in which the farm is our business is characterized by favorable soil - climate, strategic in terms of transporting the goods location, but well away from dust and harmful emissions places which allows the production of clean production if the farm has the potential to diversify the business by importing the structure of production of our country attractive to species, to determine the degree of influence of these risk factors on the price and selection of mining production program can Building on the literature known principle of marginal line and the critical point method in the version 'annual revenue cost to produce a certain volume of production ".. The principle of marginal line reads:" any limited investment should be allocated among its possible applications so that the last unit of it to falling unit of resource constraints, "or in other words to determine the production program and structure of the entity - large volumes of production should rely on cultural or manufacturing division, which has the - greater return per unit of scarce resource. For its part, the critical point method will allow us to determine what would be optimal for our size restrictive conditions of production, which will provide us with one hand full capacity utilization of the farm, the other stable over time as the price dohodi.Tay of the unit and the yields are important in the formation of the revenue and hence profit and rate of return on investment in a relatively constant set of parameters for the cost of the study will present how would virtually a production plan holding area 100 da specialized in producing kinds of Nuts (walnuts, hazelnuts, etc..) with opportunities to diversify the business to ensure competitiveness and sustainability as a function of time. Data from the survey are summarized and shown in Tables 2.1 and 2.2.

Production plan of holding "X"

1.Inventarizatsiya (analysis of techno - economic status) resources available to farm

Tabl.2.1

Resources	Quantity and comment
1	2
1.Plosht - first category	100 da arable land. Can be used drebnogabaritna technique. Conditions are favorable for growing types Nuts - walnut and hazelnut with the opportunity to diversify the business by producing truffles
2 Buildings	The buildings are in sufficient quantity and in good condition for storage of harvested until its realization
3.Human resources	Qualified for growers and industry - particularly for fruit. As the farm has a trained detection dogs truffles
4.Mashini	Enough for every conceivable aspect and in very good condition
5.Management	The farm has enough specialists and managers who have experience in the cultivation of the plant production, marketing and business management

Table.2.2.

Culture	Overheads lev. / da	Total revenue, lev / da	Gross profit lev / da	Return. land	Area da	Gross profit thousand
Hazelnut	1 732,8	7 560	5 827,2	5 827,2 (2)	80	466 176
Walnut	1 725,1	2 760	1 034,9	1 034,9 (4)	20	20 698
Труфели автоматично преведено от Google Truffles Alpha	2 680	64 800	61 940	61 940 (1)	100	6 194 000
Total:	6 137,9	75 120	68 802,1		100	6 880 210
Available resources					100	
Unused resources					-	
Recapitulation:	Size Inv. expenses lev. / da	General area da	Total inv. expenses	Total gross profit lev / da	Gross profit for the 100 da	Net profit from Manuf. structure where registered in CA
	6 137,9	100	613 790	68 802,1	6 880 210	6 192 189

Note: The production program of the farm is determined using realistic values of risk factors per unit price and yield per unit area of the crop. If we accept the optimistic versions of the values of risk variables situation the holding of the structure of production would not change radically as hazelnuts will again be a profitable crop to the nuts and truffles can be grown successfully in the cortex of both tree species. Logically farmer looking positive synergistic effect of its production program and on this basis for choosing its leader should be a return on the investment cost and realizing the value of the chestnut species.

To determine the minimum amount of production, reflected in equation 6, providing capacity utilization of the farm and meet the needs of production, the method of the critical point. by criterion "annual costs - revenue for a given volume production,"

$$W_A = \frac{C_f}{Z_y - C_v}, da \quad (2.1.)$$

Where: W_A is a critical area in acres and a production program this year in which the cost of production and sale of a product is equal to the revenue;

Z_y - revenue from the sale of products produced on the farm, lev / da;

This method can be applied when looking for a solution to the problem of buying and maintaining their own equipment or use of mechanized services completely or partially, and how that decision affects on business efficiency and sustainable development, which will be subject to further consideration in the development

Conclusion:

In conclusion, the choice of technology growing perennials, pricing of products, market concentration and the choice of discount rate at which the investment will be carried out are important prerequisites for sustainable business development. Their precise planning, regulation and control would reduce the level of investment risk as possible and under other conditions would allow the developer to build an adequate system of measures against the adverse consequences of deviations from the optimal financial - economic parameters of the investment. We should not ignore the role of the state in the management of investment risk. Bulgaria's policy on rural development in its production units made significant progress in recent years, but there are still some weaknesses that impede the development of entire sectors and bringing in product from outside and from it most - especially those with delayed nature return on investment. If government policy is focused on the application of economic theory known in the law of comparative advantage, which states that the manufacturer will benefit from alternative production, which has the - large comparative advantages, ie the least - opportunity costs (lost profits) which globally speaking state would concentrate its resources - material, human, natural and financial development of the sectors that are most - large comparative respectively competitive advantages should yield the most - small opportunity costs.

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